



300/1200 MODEMS TECHNICAL PROCEDURES

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TROUBLESHOOTING

Introduction

Most of the problems with modems will occur during the installation procedures. Other problems may occur only with certain baud rates or modes of operation. The purpose of this document is to give Apple Dealer Service-persons step-by-step checkout procedures to test, evaluate, and diagnose any failure related to the operation of either the Apple 300 or Apple 1200 MODEMs. These procedures can be performed using either an Apple II+, Apple //e or Apple ///. For testing and troubleshooting of modems connected to Macintosh or Lisa systems, refer to the Modem Manual (Part II) for those systems.

A. Modem Self-Test

Equipment Required:

Modem 300/1200 User's Manual (Part I: Reference)
Apple II+, //e, or /// system with drive and monitor
Apple Term program diskette (Apple Term II or Apple Term III)
Super Serial Card (for Apple II+ or //e only)
Modem 300/1200 User's Manual (Part II for Apple // or ///)
NOTE: There are two Part II manuals, one for Apple II+ and //e systems, and one for Apple /// systems. Use the one that matches your system.

1. Connect the modem to a telephone line according to the instructions on page 14 (start at the top of the page) of the Modem 300/1200 User's Manual (Part I: Reference).
2. Complete the modem hook-up to your computer according to the instructions in chapter 1 of the Modem 300/1200 User's Manual (Part II).
3. Run the self-test given in chapter 1 (see Testing with the Self-Test Procedure) of the Modem 300/1200 User's Manual (Part II).
4. After completing the self-test, press and hold down the <OPEN-APPLE> key and type "Q" (//e) or hold down the <ESCAPE> key and type "Q" (II+) to return to the main menu.
5. Type "C" to enter the Change Configuration menu. You will now select a different speed and repeat the self test.



6. Use the arrow keys (//e) or arrow keys and space bar (II+) to select 110 baud.
7. Repeat steps 3 and 4. Press <ESCAPE> to return to the main menu.
8. If you are testing a 300 baud modem, skip this step and go on to step 9. Type "C" to enter the **Change Configuration** menu. Use the arrow key (//e) or <SPACE> (II+) to select 1200 baud. Repeat steps 3 and 4.
9. Return the baud setting to 300 baud.
10. If the self-test passes skip over this step and perform the **MODEM VERIFICATION TEST** on the next page. If the self-test fails, check your installation using the checklist below:
 - Verify the setting of the switches on the back of your modem.
 - Is the modem data cable securely connected to the computer and to the modem?
 - Is the modem power module connected to the modem?
NOTE: Inspect the modem power module connector for bent or missing pins?
 - Is the modem power module plugged into an electrical outlet?
 - Is the modem turned on?
 - Verify the setting of the DIP switches on the Super Serial Card (Apple II+ or //e only).
 - Verify that the jumper block on the Super Serial Card has its triangle pointing to the word MODEM (Apple II+ or //e only).

If no problems are found during the installation check, replace the following modules (in the order listed) one at a time and rerun the self-test:

- power module
- modem data cable
- modem PCB

After isolating and repairing the problem, continue on to the **MODEM VERIFICATION TEST** on the next page.



B. Modem Verification Test

This test will verify the correct operation of the modem and the telephone lines.

Equipment Required:

Apple II+, //e, or /// system with drive and monitor
Super Serial Card (if Apple II+ or //e is used)
Apple Term program diskette
Local telephone line and a user service

NOTE: The user service may be a local bulletin board or any data service as long as the baud rate and protocol are known and can be verified. Do not attempt to test a modem by dialing an unverified user service. The results will be very confusing.

1. Obtain the telephone number of a compatible user service.
2. From the Apple Term main menu, type "U" to enter the phone directory menu.
3. Add the telephone number of the user service by holding down the <OPEN-APPLE> key and typing "A" (//e) or holding down the <CONTROL> key and typing "A" (II+). The cursor will appear at the first available line on the telephone list.
4. Type a name or label that lets you identify the number to be added. Press <RETURN> and the cursor will move to the number column.
5. Type the complete telephone number including any prefixes required to get an outside line. Do not use spaces or dashes to separate parts of the telephone number. Press <RETURN> when you are finished entering the telephone number.
6. Press <ESCAPE> to get out of the phone directory screen and return to the main menu.
7. Type "E" to enter the terminal mode.



8. Hold down the <OPEN-APPLE> key and type "D" (//e) or hold down the <CONTROL> key and type "D" (II+) - this will automatically dial the number you entered.

NOTE: If the **CONNECT** message appears on your monitor screen and a message from the user service you dialed appears, your modem is working properly. If a **NO CARRIER** message appears on your screen, your modem was unable to connect you with the number selected and you should replace the following components (one at a time) in the order listed:

- telephone cable
- modem power module
- modem PCB
- modem data cable

After isolating and repairing the problem, verify correct operation by running the **MODEM VERIFICATION TEST** again.

C. Back-to-Back Test

This is an optional test that requires two complete computer systems and two identical modems. Perform this test only when a customers modem does not function correctly, but no problem can be found by running the **SELF-TEST** or **MODEM VERIFICATION TEST**.

Equipment Required:

- (2) Apple II+, //e, or /// systems with drives and monitors
- (2) Super Serial Card (one for each computer if Apple II+ or //e is used)
- (2) Apple Term program diskettes
- (2) identical modems (one modem must be a known good unit)
- (2) local telephone lines (two separate phone lines must be used)

If the modem fails any steps of this procedure, replace the modem power module and repeat the test. If that does not cure the problem, replace the modem PCB and repeat the test. If the modem passes all steps of this procedure, the **SELF-TEST**, and the **MODEM VERIFICATION TEST**, but the customer still cannot get the modem to work at their site, have the customer contact the telephone company to investigate their telephone line.



1. With both modems installed according to the User's Manual instructions, turn the computers and modems on and boot the Apple Term software on both systems.
2. On the system with the suspected bad modem, type "U" to enter the phone directory menu.
3. Add the telephone number of the known good modem to the phone directory by holding down the <OPEN-APPLE> key and typing "A" (//e) or holding down the <CONTROL> key and typing "A" (II+). The cursor will appear at the first available line on the telephone list.
4. Press <RETURN> and the cursor will move to the number column.
5. Type the telephone number of the known good modem. Do not use spaces or dashes to separate parts of the telephone number. Press <RETURN> when you are finished entering the telephone number.
6. Press <ESCAPE> to get out of the phone directory screen and return to the main menu.
7. Type "E" on both computers to enter the terminal mode.
8. On the system with the suspected bad modem, hold down the <OPEN-APPLE> key and type "D" (//e) or hold down the <CONTROL> key and type "D" (II+) - this will automatically dial the number you entered (the known good modem). The **CONNECT** message should appear on your monitor screen; if it does, go to step 9. If a **NO CARRIER** message appears on your screen, check the setup of both modems and computers, then dial again. If a **NO CARRIER** message appears again, turn both modems and computers off, replace the PCB in the suspected bad modem, and start the test again from step 1. If the test passes, the modem PCB was faulty.
9. On the system with the suspected bad modem, type a short message and verify that it is displayed on the screen of the system with the known good modem.
10. On the system with the known good modem, type a short message and verify that it is displayed on the screen of the other system (the suspected bad modem).
11. On the system with the suspected bad modem, hold down the <OPEN-APPLE> key and type "H" (//e) or hold down the <ESCAPE> key and type "H" (II+) to hang up the modem. The screen should now have the message **NO CARRIER**.



12. On the system with the known good modem, hold down the <OPEN-APPLE> key and type "Q" (//e) or hold down the <ESCAPE> key and type "Q" (II+) to return to the main menu.
13. Type "U" to enter the phone directory menu.
14. Add the telephone number of the suspected bad modem to the phone directory by holding down the <OPEN-APPLE> key and typing "A" (//e) or holding down the <CONTROL> key and typing "A" (II+). The cursor will appear at the first available line on the telephone list.
15. Press <RETURN> and the cursor will move to the number column.
16. Type the telephone number of the suspected bad modem. Do not use spaces or dashes to separate parts of the telephone number. Press <RETURN> when you are finished entering the telephone number.
17. Press <ESCAPE> to get out of the phone directory screen and return to the main menu.
18. Type "E" to enter the terminal mode.
19. Hold down the <OPEN-APPLE> key and type "D" (//e) or hold down the <CONTROL> key and type "D" (II+) - this will automatically dial the number you entered (the suspected bad modem). The CONNECT message should appear on your monitor screen; if it does, go to step 20. If a NO CARRIER message appears on your screen, check the setup of both modems and computers, then dial again. If a NO CARRIER message appears again, turn both modems and computers off, replace the PCB in the suspected bad modem, and start the test again from step 1. If the test passes, the modem PCB was faulty.
20. Hold down the <OPEN-APPLE> key and type "H" (//e) or hold down the <ESCAPE> key and type "H" (II+) to hang up the modem. The screen should now have the message NO CARRIER.
21. Hold down the <OPEN-APPLE> key and type "Q" (//e) or hold down the <ESCAPE> key and type "Q" (II+) to return to the main menu.
22. Type "C" to enter the Change Configuration menu. Use the arrow keys to select touch-tone dialing.
23. Press <ESCAPE> to return to the main menu.



24. Type "E" to enter the terminal mode.
25. Hold down the <OPEN-APPLE> key and type "D" (//e) or hold down the <CONTROL> key and type "D" (II+) - this will automatically dial the number you entered.
26. When the CONNECT message appears, type a short message and verify that it is displayed on the screen of the suspected bad modem. If the CONNECT message did not appear, or if the message you typed was not displayed on the suspected bad modem, replace the PCB in the suspected bad modem and run this test again.

TAKE-APART

NOTE: There are two types of Modem 1200 PCB's, one that requires a sprayed case and one that does not. The sprayed Modem 1200 service stock and exchange modules cannot be used to repair the unsprayed Modem 1200's. See the Illustrated Parts List for the differing service stock part numbers for the sprayed case Modem 1200 and the unsprayed case Modem 1200.

PCB Removal

1. Carefully pry off the two rubber feet from the bottom front of the modem.
2. Remove the four screws holding the two case halves together.
3. Remove the bottom cover and set it aside.
4. Lift out the modem PCB.
5. Remove the service spare modem from the shipping box. Notice that the top and bottom covers are labeled "service use only". These covers must be returned with the faulty board for service credit.
6. Remove the service replacement board in the same way as you did the customers board. Replace the bad board with the service spare, after first confirming that the two are the same model.
7. Place the bad board on the service covers and fill out the service repair order information. Ship the bad board and/or modem power module to the Apple Service Center for credit.





Apple Modem Technical Procedures

Section 2

Illustrated Parts List

The figures and lists below include all piece parts that can be purchased separately from Apple for the Apple Modem, along with their part numbers. These are the only parts available from Apple. Refer to your Apple Service Programs manual for prices.

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NOTE: UNLESS OTHERWISE SPECIFIED

1 MANUAL REFERENCE
LEVEL 1 TECH. PROC
072-0962

Apple Modem

rev. Apr 85

page 2.1

D

NOTE: UNLESS OTHERWISE SPECIFIED

1 MANUAL REFERENCE
LEVEL 1 TECH. PROCEDURES
072-0062

C

B

A

DRAWING NUMBER
070-0182-A

REV. ZONE **ECO #**
A **SUP93**

REVISION
INITIAL RELEASE

AMHD DATE

METRIC

DIMENSIONS ARE IN MILLIMETERS

X 1 — TOLERANCE X10. —
XX 1 — ANGLES 2 —
MATERIAL —
FINISH —

DESIGNER **DRIFT CLK**
Engineering **6/84**
ENG APPROV **MFG APPL**
RELEASE **ORIG DIV**
DESIGNER **SERVICE**
SCALE **N/A**

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TITLE **ILLUSTRATED PARTS**
LIST
MODEM 300 / 1200

SIZE **B** **DRAWING NUMBER**
070-0182-A **1/2**

A

1

2

3

4

5

6

7

Figure 1



APPLE MODEM (Figure 1)

Item	Part No.	Description
1	815-0790	Top Cover
2	076-8077	Transformer, Cable Assembly
3	661-75164	PCB, Modem 1200
4	661-75165	PCB, Modem 300
5	661-0293	PCB, Modem 1200, w/CSA
6	865-0003	Rubber Foot
7	815-0791	Bottom Cover



1	REVISION	A/P/D	DATE
2	REV. ZONE ECO I		
3			
4	<u>NOTE: UNLESS OTHERWISE SPECIFIED</u>		
D	C	B	A

DRAWING NUMBER 070-0182-A SHT 2/2

apple computer inc.

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METRIC
DIMENSIONS ARE IN MILLIMETERS
X = TOLERANCE X0.0 ±
XX = TOLERANCE XX.0 ±
ANGLES: A =
FINISH: —
MATERIAL: —
DISTANCE: 10mm 6 1/4
ENG APPVL / MFG APPVL /
RELEASE / ORIG ENV SERVICE /
DESIGNER: N/A SCALE: N/A

ILLUSTRATED PARTS LIST
MODEM 300 / 1200
DRAWING NUMBER 070-0182-A SHT 2/2

Figure 2



APPLE MODEM CABLES & CONNECTORS (Figure 2)

Item	Part No.	Description
1	076-8075	Cable Assembly, RJ-11
2	590-0121	Cable Assembly, Interface, (II,///, Lisa/Macintosh XL)
3	590-0197	Cable Assembly, Interface (Macintosh)
4	590-0192	Cable Assembly, Interface (IIC)

